

MAMMALOGY.—*Four new mammals from the Anglo-Egyptian Sudan.* HENRY W. SETZER, U. S. National Museum.

Through the efforts and cooperation of the United States Naval Medical Research Unit No. 3 and John S. Owen, formerly district commissioner of Torit District, Equatoria Province, a large collection of mammals has been made available through the Chicago Natural History Museum for study. The specimens, here designated as types, are a part of a larger collection purchased by Harry Hoogstraal from John S. Owen for the Chicago Natural History Museum. The only specimens previously reported from this province were obtained by the Smithsonian Roosevelt African Expedition of 1909–1910 near Nimule and Lado, which were then politically a part of Uganda. The bulk of the present collection was made near Torit and in the Imatong Mountains, both of which lie on the east side of the province. Capitalized color terms are from Ridgway's *Color standards and color nomenclature*. All measurements are in millimeters.

Graphiurus murinus sudanensis, n. subsp.

Type.—Chicago Natural History Museum, no. 79429, adult female, skin and skull, from Torit, Equatoria Province, Anglo-Egyptian Sudan. Obtained December 4, 1951, by J. S. Owen; original number, 2143.

Specimens examined.—Twelve, from Equatoria Province; Torit, 11; Obbo, 1.

Distribution.—Known only from the above localities.

Diagnosis.—Hairs of upper parts with a broad basal plumbeous band, a narrow subterminal band of Clay Color, and then finely tipped with black; color darkest on top of head; hairs of shoulders with a basal plumbeous band and a broad terminal band of Cinnamon-Beige, thus giving the animal a "collared" appearance; black orbital rings conspicuous; cheeks, belly and dorsal surface of hind feet whitish; chest, throat and inside of forelimbs strongly washed with Mikado Brown; tail brownish gray, most hairs white tipped; dorsal surface of hands brownish. Braincase vaulted; width across zygomatic arches greatest at middle; upper toothrows parallel; auditory bullae strongly inflated ventrally; external pterygoid processes widely flaring.

Measurements of type specimen.—Total length 175; length of tail 82; length of hind foot 18; condylobasal length of skull 22.2; greatest zygomatic width 14.6; least interorbital width 4.2; crown length of upper toothrow 3.1; condyloincisive length 23.8; length of nasals 9.6; width of rostrum at level of infraorbital foramen 5.6.

Comparisons.—*Graphiurus murinus sudanensis* differs from *G. m. griseus* from the Isiola River, British East Africa, in that the braincase is less vaulted; the width across the zygomatic arches is greater; the rostrum is wider; the nasals are more rounded anteriorly; the auditory bullae are smaller but more inflated ventrally; the upper toothrows are parallel instead of divergent anteriorly. The color is lighter throughout and the hairs of the tail are white tipped and not concolor.

From *Graphiurus murinus saturatus*, as known from Kaimosi, British East Africa, *G. m. sudanensis* differs in that the bullae appear larger antero-posteriorly but equally inflated ventrally; width across zygomatic arches less, the widest point being, in general, near the middle of the arch and not near the temporal root; the rostrum is narrower; the least interorbital width is generally less. Dorsal color is lighter; the tail is brownish gray instead of brownish; there is more white on the cheeks; and the belly instead of being strongly washed with buff is whitish.

From *Graphiurus parvus parvus* and *G. p. dollmani*, *G. m. sudanensis* differs in being decidedly larger and darker in color.

From *Graphiurus christyi*, as known from Medje, Belgian Congo, *G. m. sudanensis* differs in having the braincase less vaulted; the width across the zygomatic arches less; the rostrum narrower; the nasals not projecting so far posteriorly; the auditory bullae larger and more inflated; the upper toothrows parallel and not diverging anteriorly. The color is lighter; the white markings of the face are present; and the hairs of the belly are more broadly tipped with white.

No specimens of *Graphiurus butleri* are available for comparison, but on the basis of published measurements it appears that *G. m. sudanensis* is smaller; the skull is shorter and narrower; the interorbital constriction is less; the nasals are

markedly shorter; and the upper tooththrow is shorter.

Specimens of *Graphiurus orobinus* are not available for comparison, but it seems to me that because of its extremely short hind foot this species is in no way related to *G. m. sudanensis*.

From the type of *Graphiurus personatus*, *G. m. sudanensis* differs in being markedly larger and grayer.

Remarks.—Even though actual intergradation cannot be demonstrated with allied races of *Graphiurus murinus*, the majority of the characters of the Sudanese specimens place them in that species. It may well be that as additional specimens are acquired, the species *christyi* and *butleri* will be shown to intergrade with adjacent races of *murinus*.

It is interesting to note that all the specimens except two were taken in native huts. The two exceptions were taken from a tree in the savanna.

Otomys orestes giloensis, n. subsp.

Type.—Chicago Natural History Museum, no. 73901, adult female, skin and skull, from Gilo (long. 32° 50' 38" E., lat. 4° 2' N.), Imatong Mountains, 6,500 feet, Torit District, Equatoria Province, Anglo-Egyptian Sudan. Obtained 10 November 1952 by J. S. Owen; original number, 2278.

Specimens examined.—Nine, all from Gilo.

Distribution.—Known only from the type locality.

Diagnosis.—Over-all coloration of upper parts Olive Brown shading into the plumbeous belly; no sharp line of demarcation between upper parts and belly; plumbeous of belly washed with buff. Tail black above, buffy gray below, the colors not sharply separated. Rostrum of skull relatively long and narrow; nasals not greatly expanded at tip; interorbital region relatively wide; bullae relatively large; upper tooththrow relatively long.

Measurements of type specimen.—Length of head and body 161; length of tail 71; length of hind foot 28; length of ear from crown 17; condyloincisive length of skull 34.7; alveolar length of upper tooththrow 8.8; length of anterior palatine foramina 6.6; width across zygomatic arches 18.5; least interorbital width 4.6; length of nasals 15.7.

Comparisons.—From the type of *Otomys orestes dollmani*, *O. o. giloensis* differs in darker color, larger body, and longer hind foot. The rostrum is longer and narrower; the nasals less expanded

distally; the interorbital region wider; the upper tooththrow longer; the auditory bullae larger and more inflated; the width across the zygomatic arches greater; and the wings of the mesopterygoid less flaring.

From *Otomys orestes orestes* as known by specimens from Mount Kenia, British East Africa, *O. o. giloensis* differs in generally darker coloration and somewhat smaller hind feet. The skull differs in wider interorbital region; nasals less flaring anteriorly; anterior palatine foramina shorter; auditory bullae smaller but relatively more inflated ventrally; and upper tooththrow shorter.

Remarks.—This new subspecies is well marked both in color and in cranial characters. In morphological characters it is closer to *O. o. dollmani* than to the nominate race. All of the specimens in the type series show the six laminae of M³, which appear to be typical of the *orestes*, *irroratus*, *kempi* section of the *irroratus* group as defined by Ellerman in *The families and genera of living rodents*, vol. 2.

Mus triton imatongensis, n. subsp.

Type.—Chicago Natural History Museum, no. 79535, adult male, skin and skull, from Gilo (long. 32° 50' 38" E., lat. 4° 2' N.), Imatong Mountains, Torit District, Equatoria Province, Anglo-Egyptian Sudan. Obtained January 18, 1952, by J. S. Owen.

Specimens examined.—Twelve, all from Gilo.

Distribution.—Known only from the type locality.

Diagnosis.—Upper parts Warm Sepia in over-all tone; hairs finely tipped with Saccardo's Umber; belly, throat, chin, upper lips, and ventral surfaces of forelegs whitish with hairs plumbeous-based and lightly washed with buffy; dorsal surfaces of hands and feet blackish. Skull with narrow interorbital region; auditory bullae relatively large; upper tooththrow relatively short; interpterygoid space relatively wide.

Measurements of type specimen.—Length of head and body 69; length of tail 53; length of hind foot 16; length of ear from crown 7; condyloincisive length of skull 19.5; width across zygomatic arches 10.3; length of nasals 7.8; least interorbital width 3.9; length of upper tooththrow 3.7.

Comparisons.—*Mus triton imatongensis* differs from *M. t. triton*, as represented by the type and type series of *Mus nainashae* Heller, from the

Aberdare Mountains, British East Africa, in: Color generally darker, that is with less yellow in the pelage; skull with markedly larger bullae; shorter maxillary tooththrow and narrower interorbital; more vaulted and less laterally expanded cranium.

The only other form with which *Mus triton imatongensis* might be confused is *Mus musculoides*, from which it may be distinguished by the plumbeous instead of pure white belly.

Remarks.—The specimens in the type series were all taken in grassy situations either in coffee plantations or along forest streams. The outstanding characters separating *M. t. imatongensis* from the nominate race are in the development of the auditory bullae and the vaulting of the cranium. These two characters may be of specific importance, but I feel that it is better to refer these animals to *Mus triton* to which they are closely related.

***Mus bellus aequatorius*, n. subsp.**

Type.—Chicago Natural History Museum, no. 79510, adult female, skin and skull, from Torit, Torit District, Equatoria Province, Anglo-Egyptian Sudan. Obtained by J. S. Owen, March 1, 1952.

Specimens examined.—Thirty-one, from: Torit, 29, Ikoto, 1; Obbo, 1.

Distribution.—Known only from the above localities.

Diagnosis.—Coloration of upper parts Clay Color strongly intermixed with black; Clay Color purest on cheeks, above eyes, a thin band on upper arm, and a thin line between the dorsal color and the belly. Dorsum with conspicuous wide blackish stripe, almost lacking Clay Color, from tip of nose to base of tail. Belly, hands, feet, throat, chin, hips, and postauricular and subauricular spots pure white. Rostrum and interorbital region of skull relatively narrow; maxillary tooththrow short; sides of anterior palatine foramina not flaring.

Measurements of type specimen.—Total length

82; length of tail 32; length of hind foot 11; length of ear 7; condyloincisive length of skull 15.9; crown length of upper tooththrow 2.8; width across zygomatic arches 8.8; least interorbital width 3.1; length of nasals 6.2; width of rostrum at level of infraorbital foramen 2.2.

Comparisons.—From the type of *Mus bellus gondokorae*, *M. b. aequatorius* differs in darker, more clearly defined dorsal stripe; less yellow in pigmented areas; pronounced subauricular and postauricular spots as opposed to a minute subauricular and no postauricular spot in *M. b. gondokorae*; rostrum narrower; tooththrow shorter; lateral margins of anterior palatine foramina nearly straight rather than bowed laterad; interorbital region narrower.

Mus bellus aequatorius differs from the type of *M. b. enclavae* in: Color lighter in all respects but with the dark dorsal stripe more pronounced; postauricular and subauricular spots conspicuous (there is only a suggestion of the subauricular spot in *M. b. enclavae*); rostrum narrower; upper tooththrow shorter; auditory bullae larger; interorbital region narrower; width of skull at level of temporal root of zygomatica narrower; wings of pterygoid less flaring.

Remarks.—Most of the specimens examined came from savanna, but a few were taken in buildings occupied as a laboratory at Torit.

One specimen from Obbo is intermediate in color between *M. b. aequatorius* and *M. b. enclavae* and has only a faint subauricular spot as in the latter. The skull, however, is like that of *aequatorius* in all critical characters. This specimen is, therefore, referred to *aequatorius* but is not considered to lie within the normal range of variation of the typical form.

The most outstanding character of this new subspecies is the pronounced white band below and in back of the ears. This one character alone separates *M. b. aequatorius* from *M. b. enclavae* and *M. b. gondokorae*. In none of the subspecies from British East Africa does this white spot show so conspicuously.